

## **REMARKS**

Applicant thanks Examiner for the courtesies extended during the interview on September 19, 2007.

Currently, claims 64-88, including independent claim 64, are pending in the present application. Independent claim 64, for example, is directed to a method for detecting an analyte within a test sample. The method comprises providing a lateral flow assay device that comprises a porous membrane in fluid communication with phosphorescent particles conjugated with a specific binding member. As now amended, the phosphorescent particles comprise a phosphorescent label encapsulated within a matrix, the phosphorescent label having an emission lifetime of about 1 microsecond or more **and a Stokes shift of greater than about 100 nanometers**.

In the Office Action, independent claim 64 was rejected under 35 U.S.C. §103(a) as being obvious over Daniels, et al. (U.S. Patent Application Publication No. 2002/0004246) in view of Klimant (U.S. Patent No. 6,770,220) and further in view of O'Riordan, et al. (*Anal. Biochem.*, 290 (2001) 366-375). Daniels, et al. is directed to a method for detecting an analyte. More specifically, the method employs semiconductor nanocrystals and microspheres dyed with semiconductor nanocrystals as detectable labels in a variety of biological and chemical formats, including immunochromatographic strip assays. As correctly noted by the Examiner, however, Daniels, et al. fails to disclose one or more limitations of the present claims. For example, Daniels, et al. does not disclose the use of phosphorescent particles that comprise a phosphorescent label encapsulated within a matrix, the phosphorescent label having an emission lifetime of about 1 microsecond or more. Independent claim 64 has now been amended to include

the limitation of a Stokes shift of greater than about 100 nanometers to further exemplify that not all limitations are taught by Daniels et al.

In Daniels, et al. there is no mention of the semiconductor nanocrystals exhibiting a Stokes shift of greater than 100 nanometers. In fact, Daniels, et al. states that the longest excitation wavelength occurs near to, but at slightly higher energy than the emission wavelength (paragraph [0086]). This property is exhibited in Daniels, et al. in Example 1, which discloses an excitation wavelength of 488 nanometers and a emission wavelength of 563 nanometers (paragraphs [0260], Fig. 4).

Conversely, independent claim 64 requires a phosphorescent label having a Stokes shift of greater than 100 nanometers. This limitation minimizes background interference and makes it easier to eliminate reflected excitation radiation from the emitted signal. Thus, a Stokes shift of greater than about 100 nanometers aids in the detection of the emission wavelength by isolating the emission wavelength from the excitation wavelength. With an emission wavelength close to the excitation wavelength, as taught in Daniels, et al., the emission wavelength is not sufficiently isolated from the excitation wavelength. Therefore, Applicants respectfully submit that the presently pending claims are not taught or suggested by Daniels, et al.

Additionally, Daniels, et al. teaches away from this limitation based on the nature of the semiconductor nanocrystals. Not only is the emission wavelength of the semiconductor nanocrystals near the excitation wavelength making it harder to discern the emission wavelength, but the semiconductor nanocrystals can also emit a number of discrete emissions at varying intensities (paragraph [0169]). In some instances this causes spectral overlap (paragraph [0166]). However, because semiconductor

nanocrystals, unlike dye molecules, can be easily modeled as Gaussians, they can be more easily and more accurately deconvoluted (paragraph [0158]). Based on these teachings, one of ordinary skill in the art would find no need to have a Stokes shift of greater than about 100 nanometers since even with close emission and excitation wavelengths and overlapping spectra, the emission wavelength of the semiconductor nanocrystals is easily resolved. Therefore, Daniels, et al. teach away from the limitations of the presently pending claims.

Nevertheless, in the Office Action, Klimant and O'Riordan, et al. were cited in combination with Daniels, et al. Both references have been cited as teaching the production and properties of phosphorescent labels. However, Applicants respectfully submit that no teaching or motivation exists to combine the immunonochromatographic strip assays of Daniels, et al. with the phosphorescent labels of Klimant and O'Riordan, et al. to arrive at the limitations of independent claim 64. Even though the properties of some phosphorescent labels are known, Applicant emphasizes that the issue in conducting an analysis under 35 U.S.C. § 103(a) is not whether a theoretical re-design of a device is *possible* or that it might be *obvious to try* the modification. Instead, the issue hinges on whether the claimed invention as a whole would have been obvious.

Applicants submit that the claimed invention as a whole would not have been obvious since the semiconductor nanocrystals are not equivalent to the phosphorescent labels disclosed in claim 64. The two materials exhibit completely different properties and, thus, require different systems and different modes of analysis. For instance, the emissions of the semiconductor nanocrystals exhibit a blinking effect, which requires that there be a sufficient number of semiconductor nanocrystals so that the blinking

effect is averaged out (paragraph [0163]). Another distinction is that the phosphorescent labels need to be protected from quenchers, such as oxygen or water, whereas the semiconductor nanocrystals do not. Therefore, the claimed invention as a whole would not have been obvious to one of ordinary skill in the art.

As discussed during the interview, the present application cannot be used as a "blueprint" for selectively re-designing the references. Thus, for at least the reasons set forth above, Applicant respectfully submits that one of ordinary skill in the art would not have found it obvious to modify the references in the manner suggested in the Office Action.

It is believed that the present application is in complete condition for allowance and favorable action, therefore, is respectfully requested. Examiner DiRamio is invited and encouraged to telephone the undersigned, however, should any issues remain after consideration of this Amendment.

Please charge any additional fees required by this Amendment to Deposit Account No. 04-1403.

Respectfully requested,

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